U.S. Department of Energy
Office of River Protection
P.O. Box 450
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03-OSR-0151

Mr. R. F. Naventi, Project Manager
Bechtel National, Inc.
2435 Stevens Center
Richland, Washington 99352

Dear Mr. Naventi:

CONTRACT NO. DE-AC27-01RV14136 – REVIEW OF BECHTEL NATIONAL, INC. (BNI) AUTHORIZATION BASIS CHANGE NOTICES (ABCN)

References:

1. BNI letter from R. F. Naventi to R. J. Schepens, ORP, "Transmittal for Information – Authorization Basis Change Notices," CCN 052722, dated March 13, 2003.

2. BNI letter from R. F. Naventi to R. J. Schepens, ORP, "Transmittal for Information – Authorization Basis Change Notices," CCN 047345, dated January 23, 2003.

3. BNI letter from R. F. Naventi to R. J. Schepens, ORP, "Transmittal for Information – Authorization Basis Change Notices," CCN 047344, dated January 23, 2003.

4. BNI letter from R. F. Naventi to R. J. Schepens, ORP, "Transmittal for Information – Authorization Basis Change Notices 24590-WTP-ABCN-ENS-02-005, Revision 0, 'Changes to High-Integrity Crane Control Requirements' and 24590-WTP-ABCN-ENS-02-035, Revision 0, 'HLW and PTF PSAR Revisions Regarding SDS Shield Doors'," CCN 047335, dated December 26, 2002.

In References 1 through 4, BNI provided ABCNs to the U.S. Department of Energy, Office of River Protection (ORP) for information. ABCN 24590-WTP-ABCN-ENS-02-005, Revision 0; 24590-WTP-ABCN-ENS-02-009, Revision 0; 24590-WTP-ABCN-ENS-02-014, Revision 0; 24590-WTP-ABCN-ENS-02-020, Revision 0; 24590-WTP-ABCN-ENS-02-028, Revision 0; and 24590-WTP-ABCN-ENS-02-029, Revision 0, were reviewed by the ORP staff. The review determined that the changes made in these ABCNs provide adequate safety. The details of this review are documented in the attached report.

For several of the ABCNs, documentation demonstrating that adequate safety is maintained was not complete and, as a result, meetings and other communications with BNI staff was necessary. BNI staff was able to explain the bases for the belief that changes provided adequate safety. ORP recognizes that BNI is attempting to improve its process for performing and documenting safety evaluations of changes. Recent other examples of safety evaluations that have been provided to ORP in draft (SE Numbers 24590-WTP-SE-ENS-03-041 and –042) indicate progress is being made in ensuring that safety is maintained when changes to the facility are made. Continued improvement is encouraged.

If you have any questions, please contact me, or your staff may call Walter J. Pasciak, WTP Safety Regulation Division, (509) 373-9189.

Sincerely,

Roy J. Schepens
Manager

OSR:WJP

Attachment

REVIEW OF AUTHORIZATION BASIS CHANGE NOTICES

This report documents the U.S. Department of Energy, Office of River Protection's (ORP) review of the following Authorization Basis Change Notices (ABCN):

- 24590-WTP-ABCN-ENS-02-005
- 24590-WTP-ABCN-ENS-02-009
- 24590-WTP-ABCN-ENS-02-014
- 24590-WTP-ABCN-ENS-02-020
- 24590-WTP-ABCN-ENS-02-028
- 24590-WTP-ABCN-ENS-02-029

Review of ABCN 24590-WTP-ABCN-ENS-02-005, Rev. 0, *Changes to High-Integrity Crane Control Requirements*

- **Review of Changes Associated with ABCN 24590-WTP-ABCN-ENS-02-005, Rev. 0**

  The review examined the Contractor's documentation for the changes associated with the ABCN against the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraph 3.5.a.2.i.

  Review of the ABCN included the review of the following associated documents: (1) ABCN 24590-WTP-ABCN-ENS-02-005, Rev. 0, *Changes to High-Integrity Crane Control Requirements described in the PSAR*; and (2) Safety Evaluation (SE) No. 24590-WTP-SE-M-02-001. Changes assessed in the ABCN included deleting Risk Reduction Class mechanical crane zone controls and automation features and replacing them with administrative controls resulting in the same level of safety. No new Design Basis Events (DBE) were created.

  The ABCN identified the replacement of mechanical control features with administrative ones, but did not provide justification. In a meeting on February 19, 2003, Bechtel National, Inc. (BNI) provided the justification. BNI stated that the subject cranes had redundant video cameras that operators use to determine the location of the crane. BNI also stated that the mechanical indexing controls that are being deleted are not typically used by operators to determine location.

  The reviewer determined that the change was adequately described as required by RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraph 3.5.a.2.i.

- **Review of the Safety Evaluation Associated with ABCN 24590-WTP-ABCN-ENS-02-005 (SE Number 24590-WTP-SE-M-02-001)**

  The review examined the Contractor's SE for the changes associated with the ABCN against the requirements of RL/REG-97-13, *Office of River Protection Position on*

Contractor Initiated Changes to the Authorization Basis, Paragraph 3.5.a.1.i through viii, and 3.5.a.2.iii.

The review concurred with the BNI SE checklist questions and with the yes/no responses and the written descriptions specified in the checklist. Design documents and specifications were not reviewed due to the routine nature of the change and absence of new DBE or Important to Safety (ITS) Structures, Systems, and Components (SSC) caused by the changes.

The SE for the ABCN did not present sufficient information to determine that the change would provide adequate safety. ORP staff met with Contractor staff and obtained additional information. In the meeting, the Contractor stated that experience at West Valley, Savannah River, and the Hanford Canyons have proven that continuous positional feedback is not necessary for safe and efficient operation of the process cell cranes. In addition, removing the positional feedback system has the benefit of reducing radiation exposure to the maintenance workers. In conclusion, use of a position feedback system to process cranes would result in added dose to personnel. The reviewer agreed with BNI's justification to replace mechanical position feedback controls with administrative controls for these components.

The changes identified in the ABCN do not add new hazards. The changes do not remove SDS interlocks that are credited in the accident analysis to meet the SDS safety function to reduce the probability of a dropped load. The ABCN changes only the positional feedback and travel automation features to administrative controls (typically, use of cameras). These systems will provide crane operators positional information to ensure adequate safety is maintained and that the proposed change is consistent with the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraph 3.5.a.1.i thru viii, and 3.5.a.2.iii. Reduction in worker exposure related to crane maintenance further supports the proposed change.

Review of ABCN 24590-WTP-ABCN-ENS-02-009, Rev. 0, *Rev. to Pretreatment PSAR to Reflect System RWH Removal of Drum Lidding Machine and Drum Transfer Drawer*

- **Review of changes associate with ABCN 24590-WTP-ABCN-ENS-02-009, Rev. 0**

  The reviewer examined the Contractor's description of the changes associated with the ABCN against the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraph 3.5.a.1.i and 3.5.a.1.ii.

  Changes assessed in the ABCN included: (1) removing Drum Lidding machine; and (2) removing Drum Transfer Drawer. The assessment of the changes was based on a review of the ABCN and sections of the Preliminary Safety Analysis Report (PSAR) where the changes were proposed.

The changes identified in the ABCN were adequately described consistent with the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraph 3.5.a.1.i and 3.5.a.1.ii. These machines are being removed because the type of waste that was to be placed in drums will not be produced in the facility.

- **Review of the Safety Evaluation Associated with ABCN 24590-WTP-ABCN-ENS-02-009, Rev. 0 (SE No. 24590-WTP-SE-ENS-02-064)**

  The reviewers examined the Contractor's SE for the changes associated with the ABCN against the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraph 3.5.a.1.i through viii, and 3.5.a.2.iii.

  The reviewers concurred with each of the BNI SE checklist questions and with the yes/no responses and the written descriptions specified in the checklist. Documents reviewed included the SE and the PSAR. Design documents were not reviewed due to the routine nature of the change and absence of new DBEs and ITS SSCs caused by the changes. The changes were clearly stated and understood. Compliance and conformance with regulatory and safety standards (i.e., 10 CFR 820, 10 CFR 830, 10 CFR 835, and RL/REG-96-0006) were not affected by the changes. The reviewers concurred with the proposed changes because they met the requirements of RL/REG-97-13 noted above. The removal of the equipment does not produce new safety hazards.

Review of ANCN-24590-ABCN-ENS-02-014, Rev. 1, *HLW Pour Tunnel Lidding Station Removal & Canister Rack Modification*

The reviewer reviewed the Contractor's SE for the changes associated with the ABCN against the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraph 3.5a.1.i through viii, and 3.5.a.2.iii.

The reviewer concurred with the BNI SE checklist questions and with the yes/no responses and the written descriptions specified in the checklist. In the SE, based on a calculation, BNI concluded that the C5 containment barrier would not fail due to either the displacement of a rack, or the topping of a canister, and subsequent rack or canister impacting the C5 containment barrier as a result of a design basis seismic event. Therefore, the High-Level Waste (HLW) canister failure and rack and/or canisters impacting the C5 confinement boundary do not result in any significant increase in dose consequences to receptors or fail the C5 boundary. Hence, the categorization of racks located within the C5 boundary, as non-Seismic Class I does not create a new DBE. The reviewer agreed with the BNI justification to downgrade the seismic category of racks located within the C5 boundary.

The changes identified in the ABCN do not require new control strategies. The proposed changes are consistent with the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraph 3.5.a.1.i through 3.5a.2.iii.

Review of ABCN 24590-WTP-ABCN-ENS-02-020, Rev. 0, *HDH Decon Cave Access*

- **Review of Changes Associated with ABCN 24590-WTP-ABCN-ENS-02-020, Rev. 0.**

  The review examined the Contractor's documentation for the changes associated with the ABCN against the requirements of REG/RL-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis*, Paragraph 3.5.a.2.i.

  The evaluation of the ABCN included review of the following associated documents: (1) ABCN 24590-WTP-ABCN-ENS-02-020, Rev. 0, *HDH Decon Cave Access*; (2) SE No. 24590-WTP-SE-ENS-02-044, Rev. 0, dated December 24, 2002; and (3) applicable portions of HLW PSAR, 24590-WTP-PSAR-ESH-01-002-04, Rev. 0.

  The ABCN describes the replacement of a shield window by a personnel shielded access door (PSAD) interlocked with a gamma detector monitoring in the Canister Decontamination and Swab Monitoring Cave (System HDH [H-B035 or H-0133]) to prevent access to the System HDH if a high radiation field is present. The PSAD will also be interlocked with the entry and export hatch. In the current design, the System HDH is only accessible via the crane maintenance bay. To access the floor of the cave (classification C3/R5) involves climbing from the crane maintenance bay, 27' down a ladder. In this arrangement, it would be extremely difficult or impossible to drag a breathing hose with supplied air lines into the cave to perform plant maintenance or perform an emergency rescue.

  The ABCN contained specific references to all affected AB documents. The reviewer was able to understand the rationale for approving the change and found that the ABCN was documented consistent with the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis*, Paragraph 3.5.a.2.i.

  Review of the Safety Evaluation Associated with ABCN 24590-WTP-ABCN-ENS-02-020 (SE No. 24590-WTP-SE-ENS-02-044)

  The review examined the Contractor's SE for the changes associated with the ABCN against the requirements of REG/RL-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis*, Paragraph 3.5.a.1.i through viii, and 3.5.a.2.iii.

  The reviewers reviewed the BNI SE checklist questions and concurred with the yes/no responses and the written descriptions specified in the checklist. Documents reviewed included the SE and the PSAR. Design documents and specifications were not reviewed due to the nature of the changes and absence of new DBEs.

  Based upon evaluation of the ABCN document and the SE, the proposed changes are acceptable because they allow better access into the System HDH. The existing SDC

shield window is being replaced with an SDS PSAD with SDC interlocks. An SDS PSAD with an SDC gamma monitor interlock is similar to other ITS controls already credited in the HLW PSAR to prevent inadvertent entry into a high radiation area; i.e., the safety designation and function of ITS controls is similar for other PSADs and gamma monitor interlocks described in Section 3.4.1.11 for the Direct Radiation Hazard DBE. There is reasonable assurance that the health and safety of the public and the workers, and the environment will not be adversely affected by the changes, and that the changes comply with applicable laws, regulations and River Protection Project (RPP)-Waste Treatment and Immobilization Plant (WTP) contractual requirements. The criteria of REG/RL-97-13 described above were met, and as a result, the proposed change is acceptable.

Review of ABCN 24590-WTP-ABCN-ENS-02-028, Rev. 0, *Design Changes Associated with High Level Waste Vitrification System HSH – Mechanical Handling Diagram – Melter Cave Support Handling – Melter Cave 1*

- **Review of changes associate with ABCN 24590-WTP-ABCN-ENS--02-028, Rev. 0**

  The ABCN identified the following changes: (1) adding a Posting Box HSH-TWDVC-0001 with several ITS controls; (2) adding the associated Control Strategy Development (CSD) record, CSD-HSH/0013 to Appendix A, Hazards Assessment Report and Standards Identification Process Database for this SSCs; and (3) adding a decontamination pit with gamma interlocked hatch, shield window, and C5 ventilation that is not identified in the PSAR. The pit and decontamination tank are used for decontaminating items after they have been removed from the melter cave so hands on maintenance can be performed on the items.

- **Review of the Safety Evaluation Associated with ABCN 24590-WTP-ABCN-ENS-02-028 (SE No. 24590-WTP-SE-ENS-02-033)**

  The review examined the Contractor's SE for the changes associated with the ABCN against the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis*, Paragraph 3.5.a.1.i through viii, and 3.5.a.2.iii.

  Review of the SE determined that sufficient justification to determine whether adequate safety would be achieved was not provided. Further review of additional design documentation was necessary to determine if the changes were acceptable.

  Evaluation of the ABCN included the review of the following associated documents: (1) ABCN 24590-WTP-ABCN-ENS-02-028, Rev. 0, *Design Changes Associated with High Level Waste Vitrification System HSH – Mechanical Handling Diagram – Melter Cave Support Handling – Melter Cave 1*; (2) SE No. 24590-WTP-SE-ENS-02-033, Rev. 0; (3) Design Change Application (DCA) 24590-HLW-DCA-M-02-017, Rev. 0; (4) DCA 24590-HLW-DCA-M-02-018, Rev. 0; (5) Trend Notice TN-24590-02-00601; (6) sections of the HLW PSAR, 24590-WTP-PSAR-ESH-01-002-04, Rev. 0 where changes

were proposed; (7) Meeting minutes, CCN 036802, dated July 1, 2002, *ISM Cycle III Review of System HSH*; (8) Meeting minutes, CCN 035664, dated July 1, 2002, *System HSH ISM Scoping Meeting*; (9) Meeting minutes, CCN 050092, dated January 23, 2003, *Weekly DWP Integration/RCRA Update*; (10) Integrated Safety Management (ISM) Output Table of active CSD records, dated March 24, 2003, CSD-HHSH/N0002 through CSD-HHSH/N0018; and (11) 24590-HLW-Z0C-80-00007, *Shielding Evaluation for the HLW Decontamination Pit*, dated December 17, 2002.

In a meeting with Contractor personnel on March 11, 2003, the Contractor was able to provide adequate explanation for the 14 out of 42 "YES" answers for questions on the Safety Checklist for Design. In Question 38, the Contractor indicated "the design changes and addition of SSCs to the PSAR do not adversely affect the C5 ventilation safety function for confinement or any DBE analyzed in the PSAR"; in Question 39, the Contractor indicated, "the safety functions or ITS SSCs (gamma interlocks, position switches, crane load path components, shield windows, and shielding) are not changed by these design changes." The Contractor provided additional justification at the meeting for these statements.

Additional information and justification for the change was found in the DCAs, preliminary shielding calculations, CSD and Safety Case Requirement records. The DCA specified that these changes were due to a design error/omission and should have been included in the original HLW design. Although new ITS SSCs were added, the function or reliability of existing SSCs were documented as not being impacted, and the ITS SSCs were described in the previous version of the HLW PSAR; additional ITS SSCs that perform the same function (i.e., shield walls and covers, gamma monitors and interlocks, decontamination tank and storage pit with stainless steel liners) are being added. According to the Contractor, the original assumptions in DBE calculations are still bounding.

The decontamination tank, decontamination pit, decontamination tank, and gamma interlocked hatch have been added to better facilitate decontamination. A posting box has been added to reduce time and effort of importing small items into melter cave. These changes are considered an improvement to the design and are As Low As Reasonably Achievable (ALARA) because they facilitate decontamination and decrease time and effort of importing small items into the melter cave. In fact, the changes were driven by an ALARA design review, (24590-HLW-ADR-M-02-015) of the HLW Melter Cave Decontamination Area that identified that inadequate contamination control measures were in place. Without additional contamination control measures, personnel access into the crane decontamination area will be extremely limited, if not completely prohibited and may result in increased internal and whole body committed dose expenditures. The change also allowed a remote decontamination method for the crane.

Based on discussions with Contractor personnel and further evaluation of documents, ORP has determined the actual changes proposed are acceptable and provide adequate safety.

Review of ABCN 24590-WTP-ABCN-ENS-02-029, Rev. 0, *CMA Cable Brush to Cable Trough in HLW Facility*

- **Review of Changes Associated with ABCN 24590-WTP-ABCN-ENS-02-029, Rev. 0**

  The review examined the Contractor's documentation for the changes associated with the ABCN against the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraph 3.5.a.2.i.

  Evaluation of the ABCN included the review of the following associated documents: (1) ABCN 24590-WTP-ABCN-ENS-02-029, Rev. 0, *CMA Cable Brush to Cable Trough in HLW Facility*; (2) Safety Checklist for Design, 24590-WTP-SE-02-037, Rev. 0, dated December 19, 2002; (3) Meeting Minutes, CCN 024862, dated November 1, 2001; (4) Meeting Minutes, CCN 029317, dated February 28, 2002; and (5) applicable portions of HLW PSAR, 24590-WTP-PSAR-ESH-01-002-04, Rev. 0. The ABCN provided a brief description of the AB change; specifically, a cable trough will replace cable brushes cited in the HLW PSAR sections and tables.

  The reviewer determined the changes were adequately described as required by RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraph 3.5.a.2.i.

- **Review of Safety Evaluation Associated with ABCN 24590-WTP-ABCN-ENS-02-029, Rev. 0, (SE No. 24590-WTP-SE-02-037)**

  The review examined the Contractor's SE for the changes associated with the ABCN against the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraph 3.5.a.1.i through viii, and 3.5.a.2.iii.

  The cable brushes were intended to remove contamination from crane cables. The ISM review team determined cable brushes may not be a suitable control in removing contamination from the cable, may spread contamination along the length of the cable, and may increase the potential for airborne contamination (ISM meeting minutes; CCNs 029319 and 024862). The proposed design changes include: smooth plastic coating for the current cable design, which minimizes likelihood of contamination; and replacing cable brushes with cable troughs which will be more effective at preventing the spread of contamination. The cable trough will incorporate passive shielded plates around cables in maintenance areas and a shield box around cable reels to minimize direct radiation exposures; the trough can be decontaminated in a controlled manner during maintenance cycles.

  The reviewers were able to understand the rationale for approving the change and found the ABCN was documented consistent with the requirements of RL/REG-97-13, *Office of River Protection Position on Contractor Initiated Changes to the Authorization Basis,* Paragraphs 3.5.a.1.i through viii, and 3.5.a.1.ii. Based upon evaluation of the ABCN

document, meeting minutes, and the SE, the proposed changes are acceptable because they propose a better method to minimize contamination spread on the crane cables. There is reasonable assurance the health and safety of the public and the workers, and the environmental will not be adversely affected by the changes, and they comply with applicable laws, regulations and RPP-WTP contractual requirements.